Perceptual and Motor Skills, 1991, 73, 1244-1246. © Perceptual and Motor Skills 1991

GREATER RIGHT HEMISPHERICITY IS ASSOCIATED WITH LOWER SELF-ESTEEM IN ADULTS[1]

M. A. PERSINGER AND KATHERINE MAKAREC

Laurentian University

Summary.—28 men and 32 women were given Vingiano's Hemisphericity Questionnaire and the Coopersmith Self-esteem Inventory. People who reported the greatest numbers of right hemispheric indicators displayed the lowest self-esteem; the correlations were moderately strong ($r > .50$) for both men and women. These results support the hypothesis that the sense of self is primarily a linguistic, left-hemispheric phenomenon and that a developmental history of frequent intrusion from right-hemispheric processes can infuse the self-concept with negative affect.

A stable and integrated sense of self has been considered an indicator of optimal psychological and social adjustment (Persinger, 1987). People with low self-esteem, as defined by the Coopersmith Self-esteem Inventory, would be expected to display a less integrated self-concept and to attribute it with more negative value. Like several other authors (Edelman, 1989; Jaynes, 1976), we have hypothesized that the self-concept is primarily a linguistic artifact that is strongly coupled to traditional left-hemispheric processes (Persinger & Makarec, 1991b).

If this hypothesis is correct, then (1) people who display more left-hemispheric indicators should also exhibit elevated self-esteem (i.e., right-hemispheric dominance would be associated with lower self-esteem) and (2) normal men, who display less interhemispheric electrocortical coherence than normal women (Corsi-Cabrera, Herrera, & Malvido, 1989), should display a stronger correlation between hemisphericity and self-esteem (than women) because the potential range in the numbers of right-hemispheric intrusions is greater (Persinger, 1991). The latter prediction is concerned with the strength of the association between the two measures and does not contradict the observations that women, because they show enhanced interhemispheric coherence, should display more frequent incidences of these intrusions relative to men (Persinger, 1991) and hence exhibit lower self-esteem and greater fearfulness (Persinger & Makarec, 1991a).

To test these hypotheses, 32 women and 28 men in a first-year university course were given the Hemisphericity Questionnaire and Coopersmith Self-esteem Inventory (25 items) in a single setting. Over half the numbers of subjects were established in a profession (i.e., part-time students); the *M*s and *SD*s for the ages of the women and men were 28.5 and 9.9 yr. and 26.1

[1]Please send reprint requests to M. A. Persinger, Department of Psychology, Laurentian University, Sudbury, Ontario, Canada P3E 2C6.

and 8.7 yr., respectively (ages ranged from 20 to 54 years). One-way analysis of variance between the sexes for the measures of hemisphericity and self-esteem and Pearson correlations between the two arrays of raw scores (men and women separately) were completed by SPSS^X software on a VAX 4000 computer.

The results were clear. Both women ($r = -.58$, $p < .001$) and men ($r = -.70$, $p < .001$) displayed significant negative correlations between the hemisphericity and self-esteem scores. A comparison of coefficients indicated that the r value for the men was not significantly greater than that for the women ($z < 1.00$, $p > 0.05$). The means and standard deviations on the hemisphericity measure for the men were 0.52 and .22 and for women .59 and .20; the difference was not statistically significant ($F_{1,58} = 1.23$, $p > .05$). The means and standard deviations on the self-esteem measure for the men were 20.6 and 2.0 and for women 15.8 and 5.6; the difference was statistically significant ($F_{1,58} = 5.47$, $p < .01$).

Because a higher score on the Hemisphericity Questionnaire indicates right-hemispheric dominance, the results support the hypothesis that people with greater left-hemispheric characteristics display an elevated sense of self as defined by enhanced self-esteem. The propensity for people with greater right-hemispheric dominance to display lower self-esteem suggests a phenomenological history of more frequent negative affect. These results are commensurate with the view that the right hemisphere subserves negative affect while the left hemisphere subserves positive affect.

The inverse relationship between self-esteem and right hemisphericity could be a consequence of the statistically more frequent intrusion of negative affect. As an ontogenetic process, these intrusions could both decrease the integrity of the self-concept and attribute to it aversive characteristics, i.e., low self-esteem. Predictably, normal women, who display greater interhemispheric coherence and hence should and do (Persinger, 1991) experience more frequent intrusions than normal men, displayed significantly lower self-esteem. Vingiano (1989), using other tests, also found that left-hemisphericity groups viewed themselves in a positive light while right-hemisphericity groups were negative in their self-perceptions.

There was no statistically significant difference between these correlation coefficients for the men and women. Consequently our second hypothesis was not supported; comparable r values for a population of about 200 men and 200 women would be required to achieve statistical significance. Such a sample size suggests that any differential association between men and women for the two measures is quite small and well below the magnitude that would be expected on the basis of EEG data.

A stronger correlation was expected for men because of the reported greater specialization (and hence less electrical coherence) of the hemispheres

(Corsi-Cabrera, *et al.*, 1989) and therefore greater potential range in intermale variability. Over the last 10 years we have found consistently that men who remain within psychology courses have mean T scores >60 on the masculine-feminine scale of the MMPI. Consequently it is possible that this sample of men does not reflect the range of "maleness" in the general population.

Considering the much weaker strength of correlations between scores on the Hemispheric Questionnaire and indices of validation (Vingiano, 1989), the magnitude of the effect in this study is somewhat surprising. If these results are generalizable to the normal population, then we predict that people who display greater right-hemispheric dominance and lower self-esteem should (1) be more suggestible, (2) use more intuitive and spontaneous styles rather than sequential or logical processing for problem solving, (3) be more prone to mystical experiences and to beliefs that are condoned by "cosmic" forces, (4) have a history of delayed language acquisition or multilingual (bilingual) environments during developmental periods when the self-concept is being integrated, and (5) display periods of anxiety, depression, or desperation when the factors that define the self, such as language or culture, are threatened.

REFERENCES

CORSI-CABRERA, M., HERRERA, P., & MALVIDO, M. Correlation between EEG and cognitive abilities: sex differences. *International Journal of Neuroscience*, 1989, 45, 133-141.

EDELMAN, G. M. *The remembered present: a biological theory of consciousness*. New York: Basic Books, 1989.

JAYNES, J. *The origin of consciousness in the breakdown of the bicameral mind*. Boston, MA: Houghton Mifflin, 1976.

PERSINGER, M. A. *The neuropsychological bases of god beliefs*. New York: Praeger, 1987.

PERSINGER, M. A. Canonical correlation of a temporal lobe signs scale with schizoid and hypomania scales in the normal population; men and women are similar but for different reasons. *Perceptual and Motor Skills*, 1991, 73, 615-618.

PERSINGER, M. A., & MAKAREC, K. Psychometric differentiation of men and women by the Personal Philosophy Inventory. *Personality and Individual Differences*, 1991, 12, 1267-1271. (a)

PERSINGER, M. A., & MAKAREC, K. The sensed presence and verbal meaningfulness as temporal lobe signs: factor analytic verification of the Muses? *Brain and Cognition*, 1991 (in press). (b)

VINGIANO, W. Hemisphericity and personality. *International Journal of Neuroscience*, 1989, 44, 263-274.

Accepted December 10, 1991.